

47th CGSIC Meeting - Timing Subcommittee

Fort Worth, Texas, 25 September 2007

Chair: **Włodzimierz Lewandowski, BIPM,**

Co-Chair: **Victor Zhang, NIST**

- 14:00 Introduction – *Włodzimierz Lewandowski, BIPM*
- 14:20 Report from NIST – *Victor Zhang, NIST*
- 14:40 USNO Report – *Demetrios Matsakis, USNO*
- 15:00 GPS Receiver Calibration and Characterization – Blair Fonville, *USNO*
- 15:20 Coffee break
- 15:40 GPS/Galileo cooperation – *Ed Powers, USNO, and Jorge Hahn, ESA*
- 15:55 Time and Navigation Exhibition at the Smithsonian: An Update
– *Carlene E. Stephens, National Museum of American History*
- 16:10 Discussion
- 17:10 Session End



AREAS BEING SERVED

- **International Atomic Time (TAI) and UTC**
- **International Timing Centers**
- **Global Navigation Satellite Systems**
- **Telecommunications Industries**
- **NASA/JPL Deep Space Network**
- **NIST Global Time Service**
- **Power Grids and other Industries**
- **As Research and Comparison Tool**
- **Other**

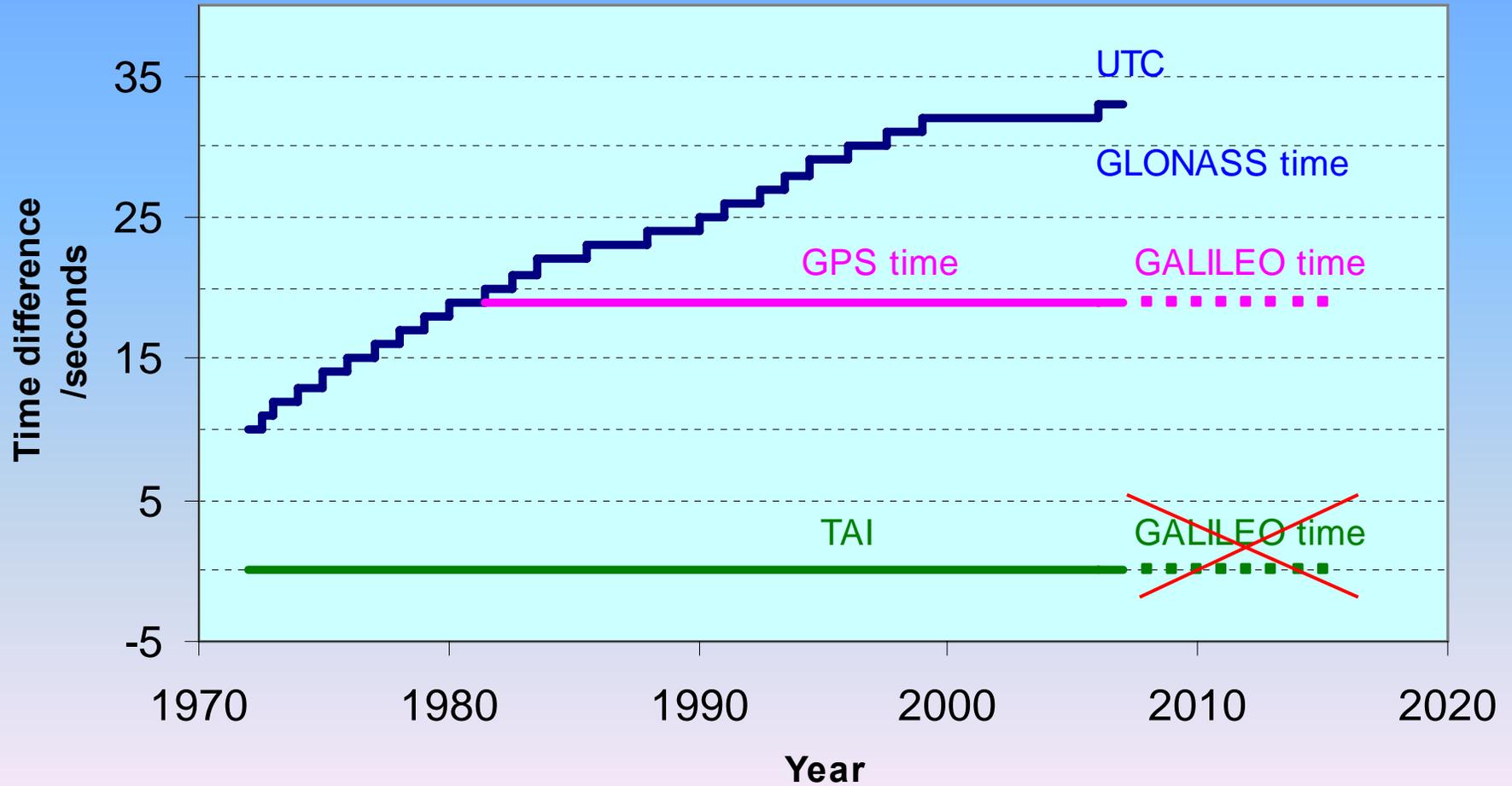
Outline of presentation

- **Change in the definition of international time scales**
 - UTC
 - TAI
 - Leap second
- **Relation between satellite time scales**
 - GPS time
 - Glonass time
 - Galileo system time





[TAI - Time scale (i)]



**International Committee on Global
Navigation Satellite Systems (ICG)
Bangalore, India
4 - 7 September 2007**

ICG Draft Recommendation

International Committee on Global Navigation Satellite Systems (ICG)

considering

- the international value of having many GNSS operational with a composite contribution of several tens of satellites,
- the desirability of using all systems interchangeably,
- the use by GPS of references very close to UTC and ITRF,
- the GLONASS efforts to approach UTC and ITRF,
- the Galileo design referring to UTC and ITRF,
- that other important satellite navigation systems are now being designed and developed*),

recommends

- that the reference times (modulo 1 s) of satellite navigation systems be synchronized as closely as possible to UTC,
- that the reference frames for these systems be in conformity with the ITRF,
- that these systems broadcast, in addition to their own System Time (ST):
 1. the time difference between ST and a real-time realization of UTC,
 2. a prediction of the time differences between ST and UTC.

*) Compass, IRNSS, QZSS, various SBAS, ...

ITU meeting on redefinition of UTC Geneva, 11-14 September 2007

To avoid proliferation of time scales ITU plans to stop application of leap seconds to UTC

- **April 2008: ITU Working Party 7A will submit to ITU Study Group 7 project recommendation on stopping leap second**
- **During 2008 Study Group 7 will conduct a vote through mail among member states**
- **2011: if 70 % member states agree World Radio Conference will approve recommendation**
- **2013: application of leap second will stop and UTC will become a continuous time scale**

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